VACANCY NOTICE

Junior Scientist Modelling and Simulation (220706)

**Primary Location:** Italy-La Spezia  
**NATO Body:** Centre for Maritime Research and Experimentation (CMRE)  
**Schedule:** Full-time  
**Application Deadline:** 10-Oct-2022  
**Salary (Pay Basis):** 4,193.62Euro (EUR) Monthly  
**Grade:** NATO Grade G11  
**Clearance Level:** NS

Appointment will be subject to receipt of a NATO SECRET security clearance (provided by the national Authorities of the selected candidate) and approval of the candidate’s medical file by the CMRE Medical Adviser.

CMRE’s Maritime Unmanned Systems Enablers (MUSE) is looking for a junior scientist with experience in programming, mathematics, and statistics to support our Modelling and Simulation team. The CMRE simulation capability is a test-bed environment to develop the concept of digital twins for Maritime Unmanned and C2 systems. This architecture is based on the M&S reference standards and includes live, virtual, and constructive simulators. The incumbent will be allocated to support the consolidation of this architecture.

**GENERAL BACKGROUND**

The Centre for Maritime Research and Experimentation (CMRE) is part of the NATO Science and Technology Organization (STO). CMRE is an established, world-class scientific research and experimentation facility that organizes and conducts scientific research and technology development, centred on the maritime domain, delivering innovative and field tested Science & Technology (S&T) solutions to address defence and security needs of the Alliance.

CMRE has more than 60 years of experience and has produced a cadre of leaders in ocean science, modelling and simulation, acoustics and other disciplines, as well as producing critical results and understanding that have been built into the operational concepts of NATO and the Nations.

**POST DESCRIPTION**

Location: La Spezia, Italy, 80 Km north of Pisa, on the Gulf of La Spezia  
Division: Research Division

**POST CONTEXT**

This is a position at the Centre for Maritime Research and Experimentation (CMRE), which is part of the Science and Technology Organization (STO) of the North Atlantic Treaty Organization (NATO).
CMRE is an established, world-class scientific research and experimentation facility that organizes and conducts scientific research and technology development, centered on the maritime domain, delivering innovative and field-tested Science & Technology (S&T) solutions to address defense and security needs of the Alliance. The position is within the Research Division (RD), which is responsible for identifying, developing and delivering Science & Technology (S&T) to the needs of the Alliance in the maritime domain.

The Division leads the development of CMRE’s scientific strategy and through its capability in ocean sensing, numerical modelling, big data analytics, artificial intelligence and autonomy, delivers the Centre's S&T goals while maintaining CMRE’s reputation within the scientific community. The Research Division comprises the four following sections:

• Anti-Submarine Warfare (ASW);
• Mine Countermeasures (MCM);
• Data & Environmental Knowledge and Operational Effectiveness (D-EKOE);
• Maritime Unmanned Systems Enablers (MUSE).

This junior scientist position is in the MUSE Section and supports the Modelling and Simulation project. The aim of the Modelling and Simulation team is to develop a multi-layer interoperable Modelling and Simulation (M&S) architecture with hardware- and software-in-the-loop capabilities. This architecture is based on the M&S reference standards and includes live, virtual and constructive simulators. The incumbent will be initially allocated to support the consolidation of this architecture.

**PRINCIPAL DUTIES**

Following the guidelines of his/her supervisors, the incumbent will be responsible for supporting and contributing to the design of conceptual models, as well as contributing to the development of technical and scientific reports and papers as part of the M&S products delivery.

The main tasks include:

- Developing simulation software, including the required software modules to guarantee compliance with standards and interoperability with CMRE M&S products.
- Contributing to the Verification, Validation and Accreditation of the simulators, and supporting all the necessary integration tests for interoperable distributed simulation experiments.
- The incumbent could be involved in all experimentation phases, ranging from design to analysis of results.
Occasionally the incumbent will be asked to work on the dissemination of CMRE output and to participate to the writing of Scientific Project for Business Development activities.

**Special Requirements and Additional Duties.**

**Flexibility Clause.**
In order for the organization to deal with emergent requirements, the incumbent may be required to perform related duties as directed for defined periods of time. Other duties should be similar, albeit in a different organisational element, to that which the individual normally works.

**Deployment/Travel.**
The incumbent may be required to undertake deployments in support of experimentation, military operations and exercises, and/or on TDY assignments, both within and outside NATO boundaries. The incumbent may be required to perform duties at sea on-board of CMRE’s or other scientific vessels.

**Certification**
Should the incumbent be required to deploy on one of the Centre’s research vessels or other ships, a fit-for-sea certificate in line with the International Maritime Organization (IMO) and International Labour Organization (ILO) standards must be obtained.

**Essential Qualifications.**

**Professional/Experience.**

Must have at least 2 years of post-graduate research, or at least 2 years of experience in scientific position in industry, academia or military research environment.

Qualified candidates will meet the following essential qualifications:

- **Programming:** knowledge of, at least, one of the following programming languages, the knowledge of more programming languages will be considered a plus:
  - C#
  - Java
  - C++
  - Python
Knowledge of the Modelling and Simulation main basic concepts (e.g. step of development, main standards, main areas of applications).

- Profound knowledge of mathematics and statistics to support experiments and analyse simulation results.
- Experience with the use of Windows and profound knowledge of MS Office.
- Excellent skills in documenting the work done and reporting scientific results in technical and/or scientific publications.

**Education/Training.**

- PhD in Engineering, Computer Science, Physics, Statistics, Mathematics or related field.

- Alternatively a Master's Degree in Engineering, Computer Science, Physics, Statistics, Mathematics or related field, or equivalent, relevant military/professional experience and education.

**Language Requirements.**

English  SLP 3333 (Listening, Speaking, Reading and Writing)

**Desirable Qualifications.**

**Professional/Experience.**

- Demonstrated experience on one or more of the following topics:
  - Modelling and Simulation expertise:
    - Knowledge on Conceptual Modelling and Verification, Validation and Accreditation
    - Knowledge on Design of Experiments techniques
  - Robotics expertise:
    - Knowledge on Software frameworks for robot software development, such as ROS or MOOS.
    - Knowledge on Autonomous Systems and Control Architecture(s) for Autonomous Systems.
  - Machine Learning expertise:
    - Knowledge of the main Machine Learning frameworks (e.g. TensorFlow or PyTorch).
  - Previous experience in Defence Sector and or specific knowledge of NATO and NATO processes
  - Previous experience in Naval Engineering and maritime domain
  - Virtual Reality expertise:
    - Knowledge on gaming or virtual reality development frameworks such as Unity3D.
Digital twin expertise:
- Experience building and validating physical models of systems.

**Language Requirements.**
English SLP 4444 (Listening, Speaking, Reading and Writing)

**Attributes/Competencies.**

The ideal candidate will be capable of working in a team, and will display; approachability, interpersonal savviness, listening ability and ability to understand others.

They must be flexible, intellectually sharp, capable, innovative, and learn quickly when facing new problems.

They must possess the capability to prioritize tasks and solve problems with a high level of autonomy.

They must possess written communications ability and must be customer focused.

**REMARKS:**

The successful candidate will be offered a 3-year definite duration contract, which may be renewed.

**HOW TO APPLY:**

Applications are to be submitted using the NATO Talent Acquisition Program (NTAP) [https://nato.taleo.net/careersection/2/jobdetail.ftl?job=220706&lang=en](https://nato.taleo.net/careersection/2/jobdetail.ftl?job=220706&lang=en). Applications submitted by other means are not accepted. NTAP allows adding attachments.

Essential information must be included in the application form. Particular attention should be given to Education and Experience section. Each question should be answered completely. Expressions such as “please see annex / enclosed document” or invitations to follow links to personal webpages are not acceptable and will be disregarded. All answers should be in English preferably, or French.